Vineyard Energy Project

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Abstract

The Vineyard Energy Project involves the deployment of customer systems to enable real-time load measurement and management while helping customers optimize their electricity usage. The main objective is to assess the effectiveness and customer acceptance of the technologies and determine the extent to which they can help accommodate greater penetration of wind energy. Home area networks, energy management systems, direct control devices (including water heaters, air conditioners, and water pumps), and various smart appliances are integrated into Vineyard Power Management System (VPMS) (i.e., Vineyard Power's load balancing system). The project also allows participating customers access to a Web portal—allowing them to view their energy usage information and their participation in adjusting the load shape to better match wind generation patterns. A supermarket implementation widely monitors energy use and connects VPMS with a temperature sensor and a load control switch in a refrigeration demand response demonstration responding to the VPMS price signal.

At-A-Glance

Recipient: Vineyard Energy Project

State: Massachusetts

NERC Region: Northeast Power Coordinating Council

Total Budget: $1,344,500

Federal Share: $567,250

Project Type: Customer Systems

Equipment

- **Customer Systems for 36 Customers**
  - **Home Area Networks**
  - **Customer Web Portal**
  - **Energy Management Systems**
  - **Direct Load Control Devices**
  - **Smart Appliances**
- **Customer System Communications Network**
- **1 Electric Vehicle Charging Station**

Key Targeted Benefits

- **Reduced Greenhouse Gas and Criteria Pollutant Emissions**
- **Reduced Electricity Costs for Customers**

Smart Grid Features

Communications infrastructure includes Internet-based, two-way communication networks that integrate the operation of customer devices and energy storage devices with VPMS. The project deploys several load control devices and gateways and current transformer controllers to both treatment and control groups of households.

Advanced electricity service options enable customers to monitor and control their electricity use. Assets include energy management systems, home or building area networks, and smart appliances, including refrigerators, ranges, microwaves, dishwashers, washers, dryers, heat pump hot water heaters. Furthermore, the project provides a Web-based customer information portal through which customers can view their own consumption and bills.

Direct load control devices include equipment used to monitor and control hot water heaters, electric home heaters, air conditioners, and water pumps. Vineyard Power is assessing the potential of these controllable loads to support energy storage devices in balancing the load to accommodate greater penetration of wind energy on the island.

The electric vehicle charging station is being deployed on a *proof-of-concept* basis. This unit is being deployed to promote the use of electric vehicles on island and study the connectivity of the station with the VPMS through a load control switch and its price signal.

Vineyard Energy Project *(continued)*

Timeline

Key Milestones	Target Dates
Development of VPMS specifications and requirements begins	Q1 2010
Development of VPMS completed	Q3 2011
Pilot deployment of customer assets begins	Q3 2010

Contact Information

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